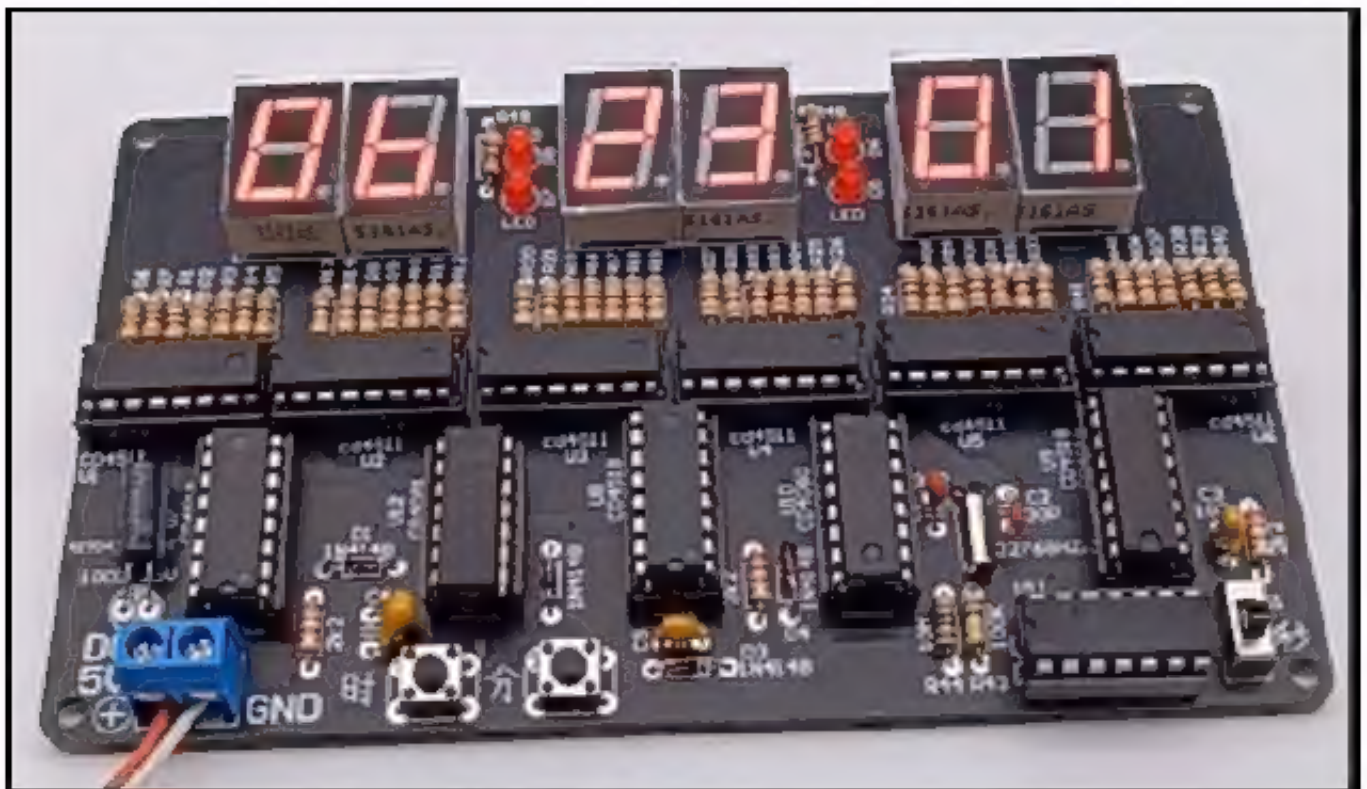


6 Digits DIY Clock Kit

Construction manual

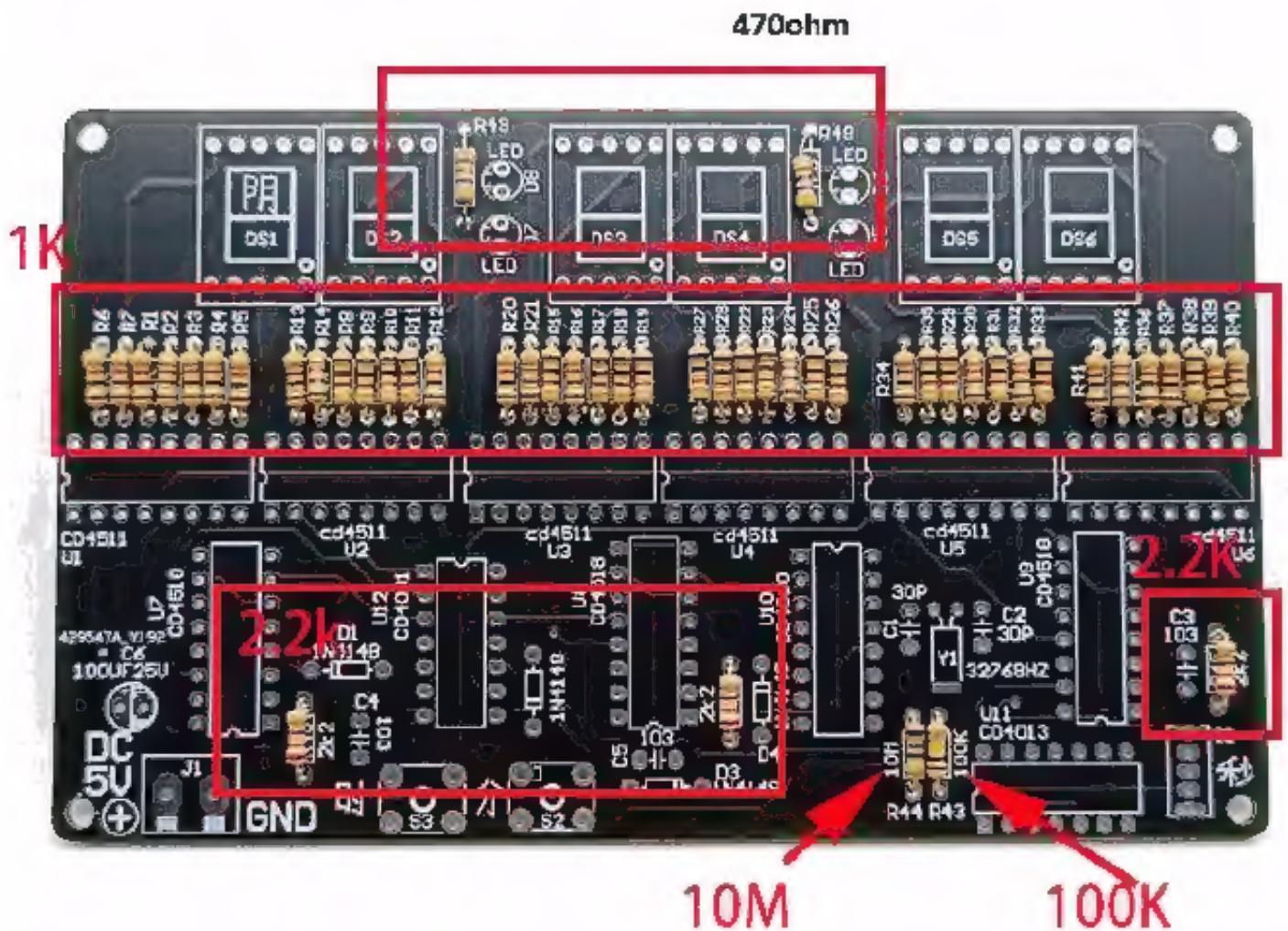


Welding resistor, non-polar, weld according to the parameters printed on the board.

1K resistor color ring: brown, black and red 100K resistor color ring: brown, black and yellow

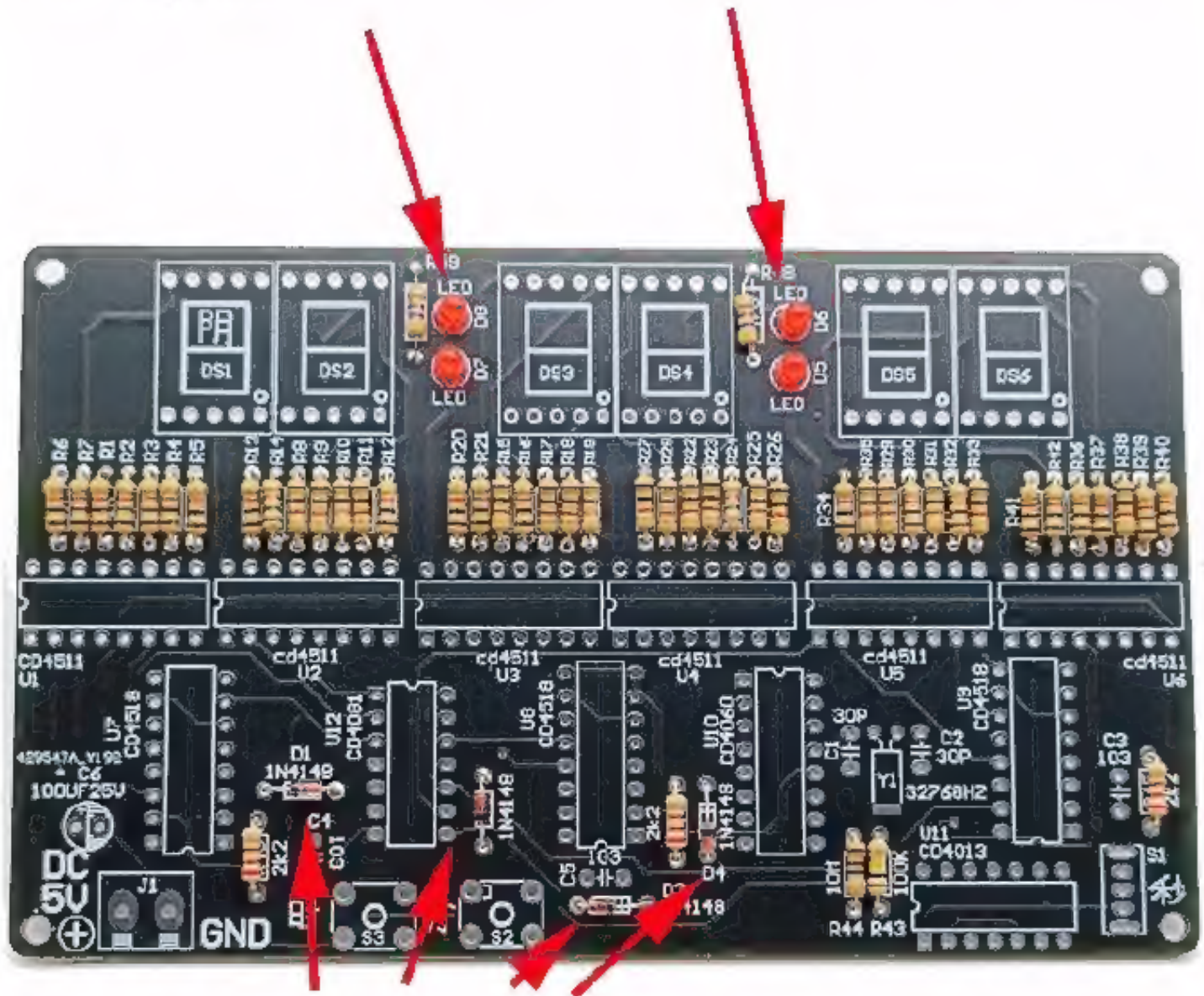
470 resistor color ring: yellow, purple and brown 10M resistor color ring: brown, black and blue

2.2K resistor color ring: red red red



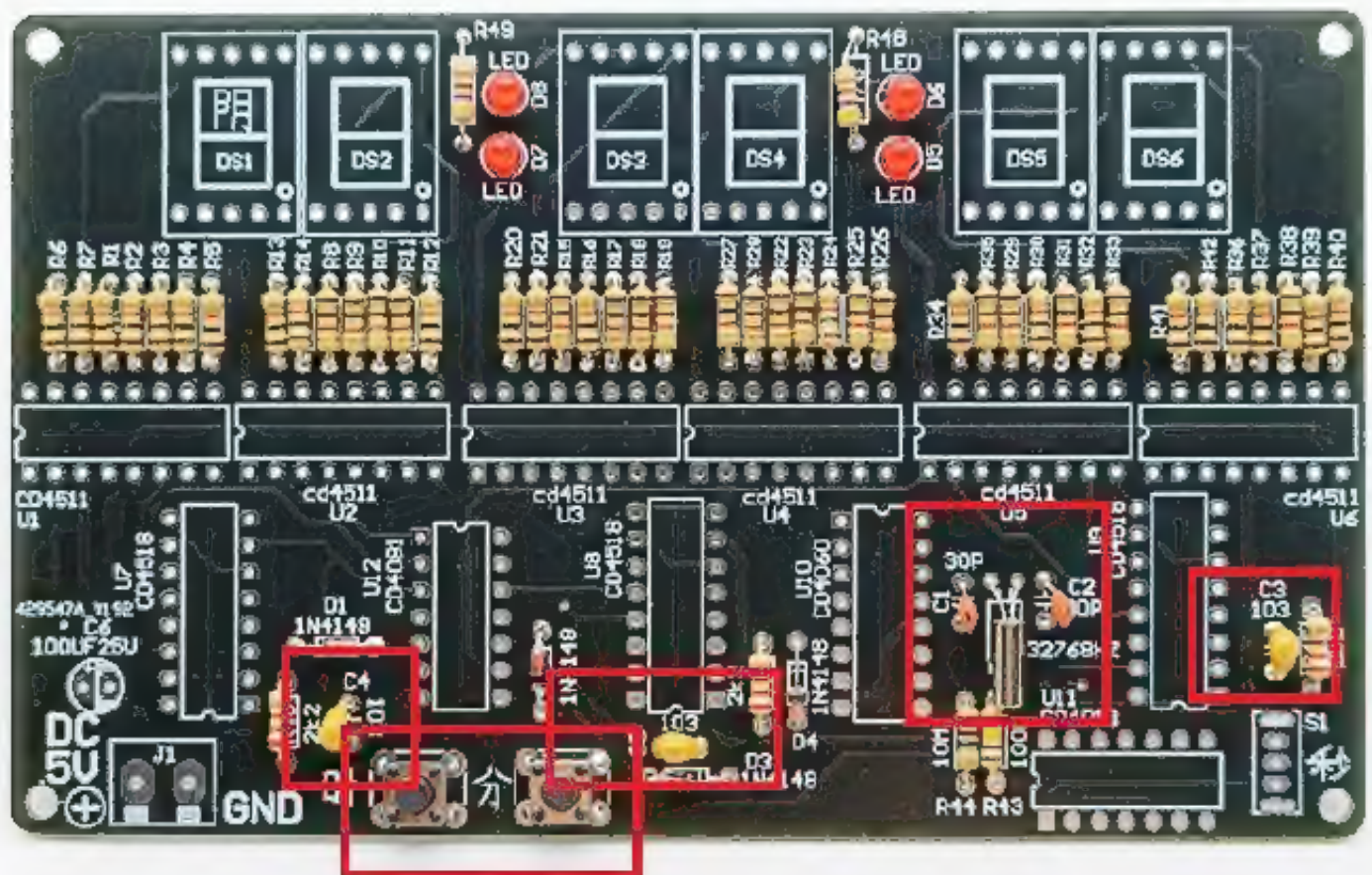
Soldering LEDs and 1N4148 Diodes

The real LED has a long leg with anode, a short leg with a cathode, and the + on the board is the anode.



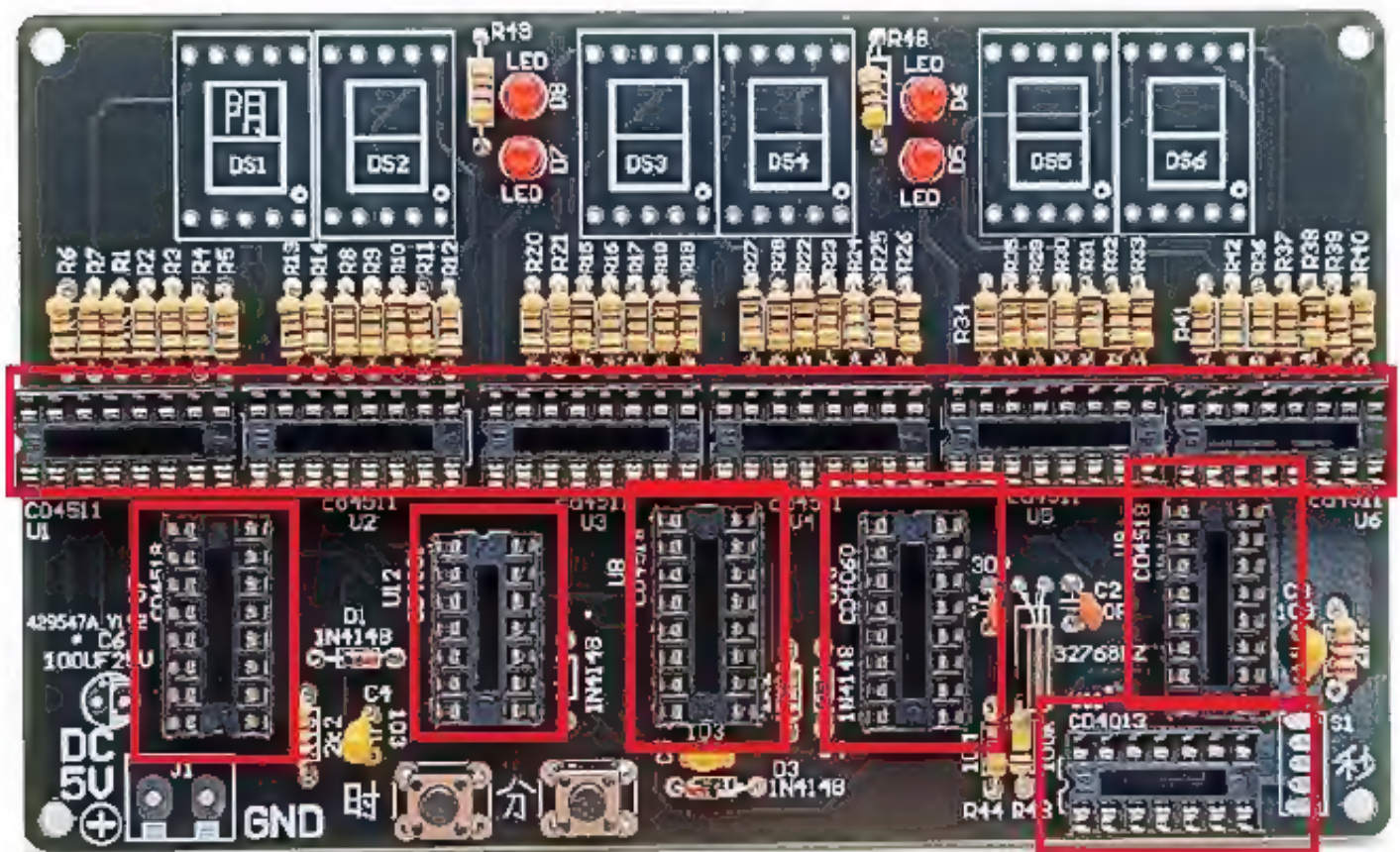
The black edge of the four 1N4148 objects is the negative electrode. Weld it according to the picture.

Welding 103 monolithic capacitors, 22P ceramic capacitors, 32768HZ crystal oscillator, 6*6*5 touch buttons.



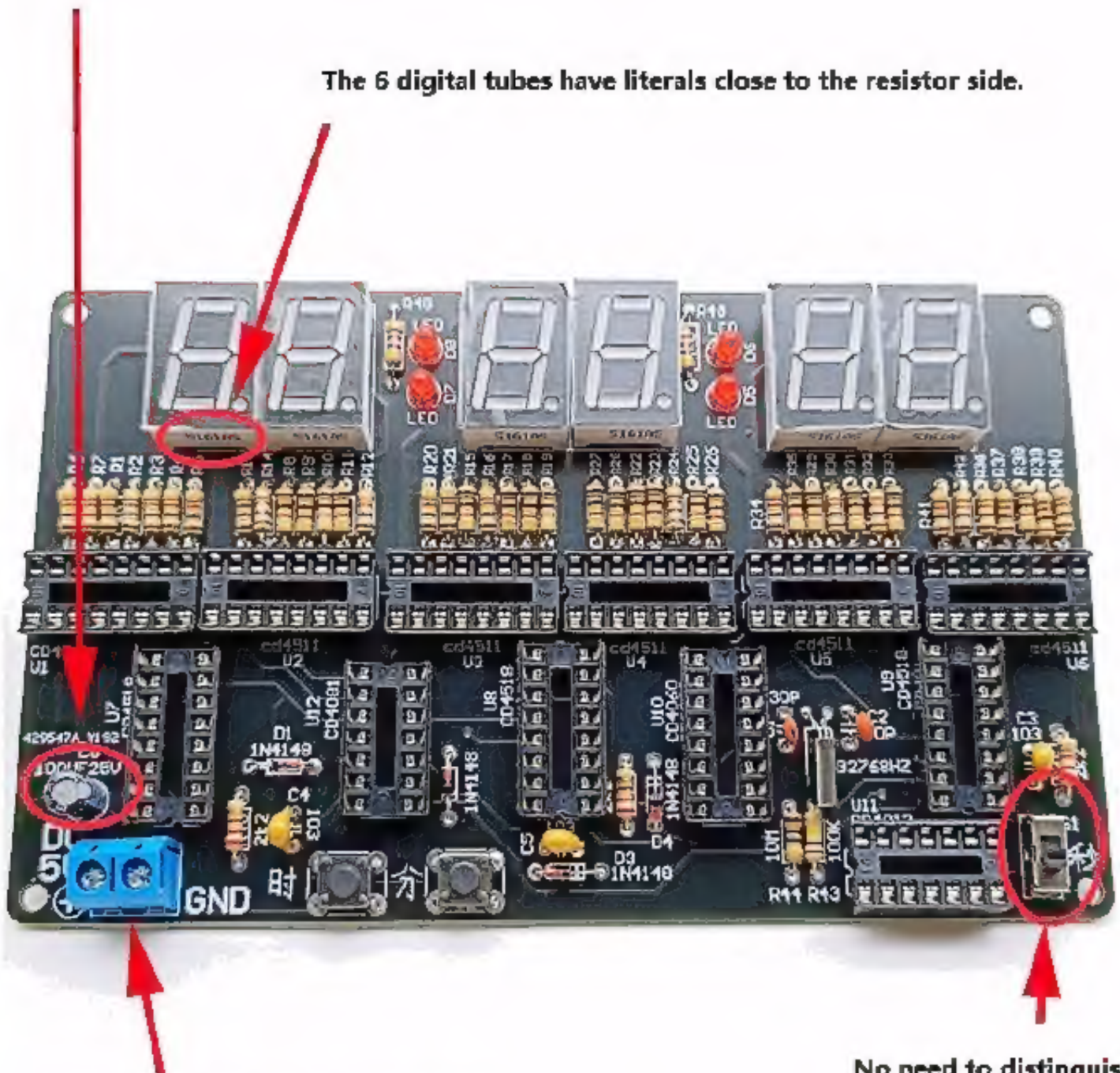
Solder 10 16P IC holders and 2 14P IC holders.

The U-shaped groove of the IC socket faces the U-shaped notch printed on the board.



Welding digital tube, toggle switch, 100UF capacitor, terminal block.
The actual long-leg positive electrode of the 100UF capacitor, the shadow printed on the board is the negative electrode

The 6 digital tubes have literals close to the resistor side.

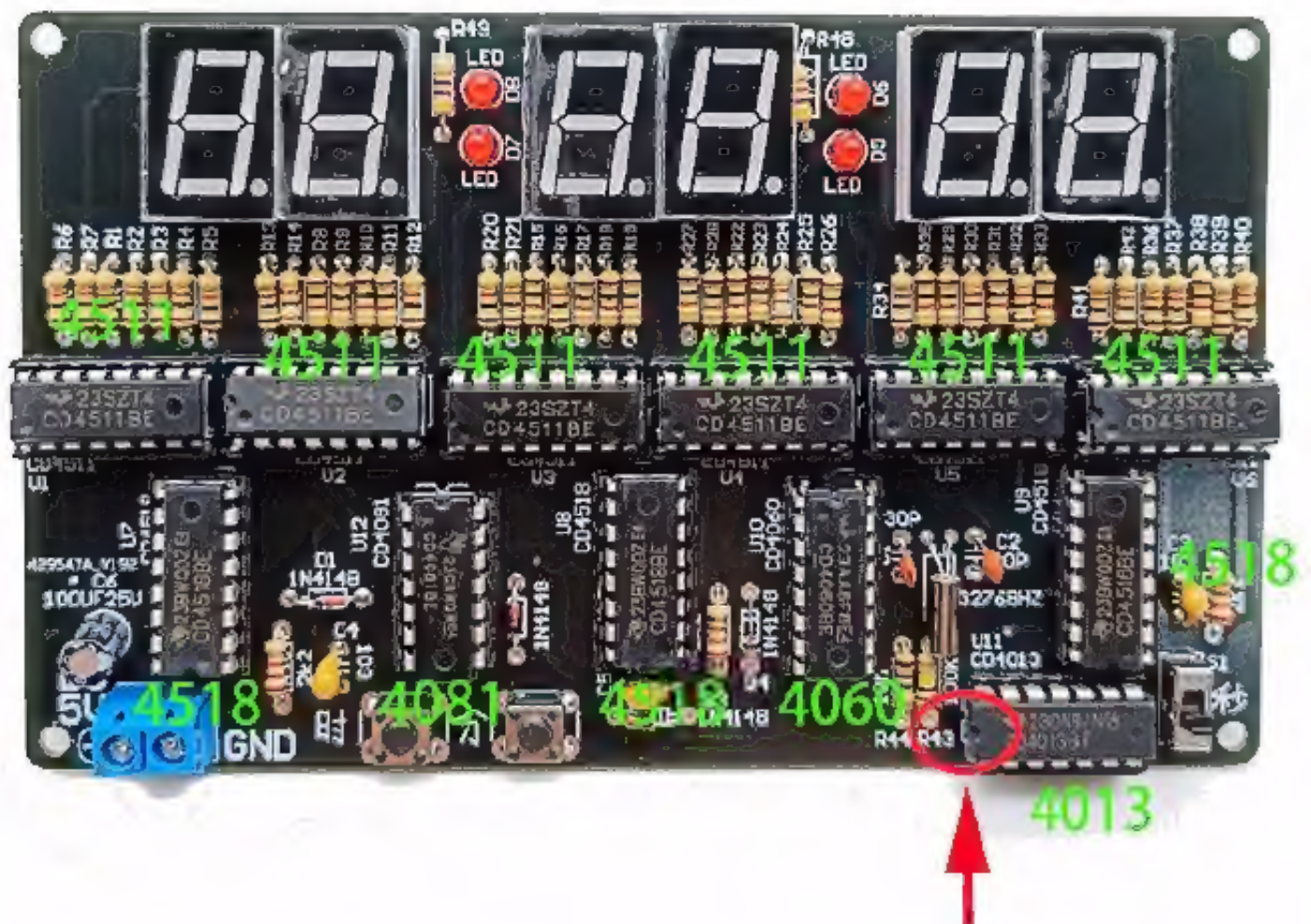


The wiring port of the terminal block
faces outside the board

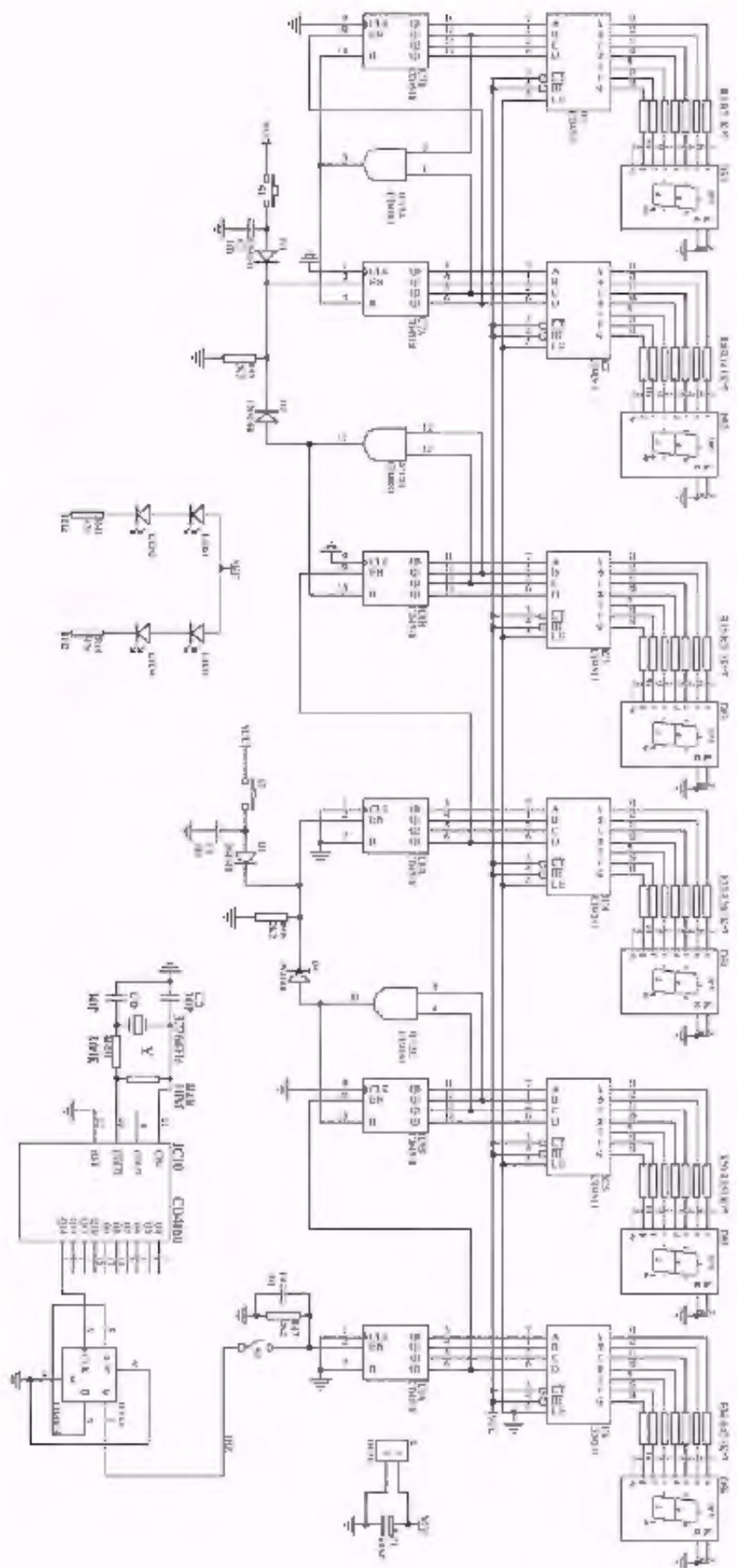
No need to distinguish
directions

Install the chip. After installation, you can power on and test.

The U-shaped notch faces the U-shaped notch printed on the board.



U型缺口



Description:

1. This product is a 24-hour digital circuit clock, using CD4518, CD4511, CD4013, CD4060 and other chips. The circuit does not contain a microcontroller, so there is no program. The hours, minutes and seconds can be adjusted, and it does not have an alarm clock function. This kit is mainly composed of a second signal generator, a counter, a decoding display, and a timing circuit. The second pulse is accurately divided by the high-frequency signal generator to obtain a 1HZ square wave signal, and the timing is relatively accurate.
2. The second signal generator consists of CD4060 and CD4013, which generates square wave signal with a frequency of 1HZ. CD4060 is a 14-level binary frequency divider/oscillator. It forms a 32.768KHz oscillator with external resistors R44, R43, C1, C2 and Y1. After 14 levels of binary frequency division, square wave signal with a frequency of 2Hz is obtained at pin 3. CD4013 contains two independent D flip-flops. One of the flip-flops is configured as a binary counter through wiring. The second signal can be obtained by binary counting the input 2Hz square wave signal. CD4518 is a double decimal adding counter. Use three CD4518s to time the hours, minutes and seconds. The hours are configured in 24-digit format, and the minutes and seconds are configured in 60-digit format. The counting result of CD4518 is output from pins Q0-Q3 to BCD decoder CD4511 in the form of BCD code. CD4511 converts the BCD code into a display segment code that lights up the corresponding digital tube, forming recognizable Arabic numerals on the digital tube, which is intuitive. Displays the current timing result.
3. The minutes and seconds are counted in base 60. The seconds signal is introduced to the EN terminal of CD4518 through switch S1, and 1 is added at the falling edge of each second signal (if the second signal is connected to the CLK terminal of CD4518, it is added at each falling edge of the second signal). The rising edge of the second signal adds 1. When the counter counts to 9, Q0-Q3 outputs 1001, that is, Q3 is 1. Since it is a decimal counter, when the next second signal arrives, the counter changes from 9 to 0, and Q0-Q3 outputs 0000, thus forming a falling edge signal on Q3. This signal is introduced into the tens counter of the seconds counter. Every time the ones counter reaches 10, the tens counter increases by 1. When the tens counter value reaches 6, Q0-Q3 output 0110, that is, Q1 and Q2 are 1 at the same time. The output 1 of Q1 and Q2 is connected to the reset terminal of the counter through an AND gate, causing the counter to count from 6 to 0 in advance, completing a hexadecimal counting cycle. The reset signal is also used as a The counting signal of the minute counter, the minute counter increases by 1 every 60 seconds. The minute counter is also in base 60. When the minute counter reaches 60, the tens digit of the minute counter also sends a reset signal through an AND gate, causing the hour counter value to increase. 1. When the counter reaches 24, Q0-Q3 of the tens digit is 0010 and Q0-Q3 of the ones digit is 0100. By doing the AND algorithm of Q1 of the tens digit and Q2 of the units digit, they are connected to the reset terminals of the two counters. Make the hour digit count return to 0 after reaching 24, realizing 24-digit counting.

Specifications:

Product power supply voltage: 4.5V-5.5VDC

Product size: 129.2CM*7.85CM

DFY component weight: 85 grams

